

SECTION VII.—WEATHER AND DATA FOR THE MONTH.

THE WEATHER OF THE MONTH.

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PRESSURE.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds are graphically shown on Chart VII, while the average values for the month at the several stations, with the departures from the normal, are shown in Tables I and III.

For the month as a whole the barometric pressure averaged above the normal throughout the whole country, except over the Florida Peninsula, where it was slightly below. The departures were generally not large, the pressure averaging but slightly above the normal throughout most southern, central, and north-central districts. The greatest plus departures appear in the northwest and northeast districts.

The month opened with relatively high pressure in the East and low pressure in the West. During the first half of the month it was generally high in most eastern districts, except for the occasional passage of a moderately low area. In the West and far Northwest after a few days of low pressure the first half of the month was generally above, while in the far Southwest it was slightly below the normal. About the 18th a tropical storm moved from the Gulf to the Great Lakes and caused low pressure in the eastern districts for several days. From the 23d to the 27th high pressures predominated in the Central Rocky Mountain and Plateau regions. The month closed with relatively high pressure in all sections except the extreme Northwest, the upper Lake region, and the Florida Peninsula, where it was below the average.

The distribution of the highs and lows was generally favorable for northeasterly winds in the South Atlantic and East Gulf States, southerly and southwesterly in the New England and Middle Atlantic States, the Lake region, Ohio Valley, upper Mississippi and lower Missouri valleys, and southeast portion of the Great Plains States, and southeasterly in the West Gulf States. Elsewhere variable winds prevailed.

TEMPERATURE.

The month opened with cool weather in the Eastern States and warm weather in the Southwest, but by the 3d a marked rise in temperature reached the central valleys and extended to the eastward, and at the same time cold weather overspread Montana and the adjacent States. For the first 9 days of October the temperature averaged above the normal in northeastern districts, the central valleys, and the central Plains States, but it was below the average during this period in the far western districts, notably in the upper Missouri Valley.

From the 8th to the 10th of the month a fall in temperature occurred from the Plains Region eastward, and by the 10th cool weather prevailed in practically all the northern part of the country. However, during the next few days warmer weather set in over the Central Plains,

gradually overspreading most central and eastern districts, and by the middle of the month quite warm weather for the season prevailed in the western part of the cotton belt. About the 18th cold weather again appeared over the northern plains, and spread southward with increasing intensity, and killing frosts occurred in Oklahoma and parts of Texas on the morning of the 20th. At the same time warm weather for the season still covered the Atlantic Coast States and eastern Lake Region. From the 10th to 19th, as a whole, the average temperature was above normal in the far Northwest and in the cotton States, but below the average in northeastern and southwestern districts. Cold weather overspread the eastern cotton States and to the northward on the 21st and 22d, with killing frosts in nearly all parts of Tennessee and portions of Mississippi and Alabama. Milder weather gradually followed and moderate temperature prevailed during the remainder of the month in most places, but it was rather warm for the season in the Central Plains, Central valleys, and the far Northwest, while cool weather predominated in the far southwestern districts. For the month, as a whole, the temperature was slightly above the normal in the central part of the country and somewhat below in the greater part of the West and the Northwest.

PRECIPITATION.

Fair weather prevailed in most eastern and central districts at the beginning of the month, and throughout the first week there was little precipitation, except in Florida and portions of the Southwest, where, especially in much of California and Nevada, the daily amounts were heavy for the season. About the 13-14th moderate rain fell in most districts north of the Ohio and Potomac rivers, the amounts being largest in parts of Michigan and northern New York and New England. About the middle of the month rains fell in southwestern Colorado and at several points in the southern Plains States. On the 17-18th a tropical storm caused high winds and much rain near the central and eastern Gulf coasts; the rainfall at Burrwood, La., for the 24 hours ending the morning of the 18th was 11.88 inches. As the storm passed northward to the Ohio Valley, heavy rains fell over practically the whole of the southeastern portion of the country on the 18th and 19th, and widespread rains of more moderate amounts occurred north of the Ohio River on the 19th and 20th. On the west side of the storm in Nebraska, Kansas, Iowa, and Illinois there was considerable snowfall for the season of the year.

During the last 10 days of the month there were few widespread storms, but about the 25th heavy rains occurred at points in northeastern Kansas, western Missouri, the upper Mississippi Valley, and upper Lake region, while on the 30th there were heavy falls in much of Georgia and eastern Florida.

For the month, as a whole, precipitation was heavy in the eastern Florida Peninsula, southeastern Louisiana, southwestern Colorado, and southeastern Utah. Rather large amounts for the season occurred in eastern Arkansas, northwestern Texas, the western portions of New Mexico and Wyoming, and northern California. Elsewhere

precipitation was generally light, with large areas in the Great Plains States having less than 1 inch, and much of eastern and central Washington and Oregon less than one-half inch of precipitation.

SNOWFALL.

A much larger extent of the country was visited by snowstorms than is usual for October, the southern limit of snow extending well into the central portions from the Ohio Valley westward to the mountains of California. From the 18th to 20th unusually heavy snows occurred over much of the lower Missouri and upper Mississippi valleys, the fall being especially heavy in portions of Nebraska, Iowa, and Minnesota. In the western mountain districts snow was reported from nearly all portions and over large areas from Montana southward over Wyoming, Colorado, Utah, and Nevada the amounts were unusually large.

Warmer weather following the snowfall soon caused it to disappear and at the end of the month but little remained on the ground, except in the higher mountains.

RELATIVE HUMIDITY.

For the month as a whole the relative humidity throughout the Great Plains States and to the westward was generally above the normal, except in Washington, Oregon, and the extreme western portions of Idaho and Montana, where the weather for the month was drier than usual. On the other hand the month was relatively damper than the average in much of the Mississippi and Ohio Valleys, the Lake region, the eastern Gulf and the Middle Atlantic States, save in portions of the Carolinas and Georgia, where it was drier. In the southern portions of the New England and Middle Atlantic States the relative humidity for the month averaged near or slightly above the normal.

GENERAL SUMMARY.

Mild weather, little rain, and much sunshine gave conditions favorable for the maturing and harvesting of late crops in most central and eastern districts. The seeding of winter grains was delayed on account of lack of moisture during the early part of the month in nearly all sections of the country, particularly in the Mississippi Valley States. However, the rains which occurred during the latter half of the month made possible the carrying on of this work, and excellent progress was made except in parts of the south central, north central, and extreme eastern districts. Seasonable temperature and abundance of sunshine were favorable for picking cotton, and this work progressed in a very satisfactory manner. There was not enough rain for pastures in some eastern States, but in most sections the pastures and ranges were favorably affected by moisture, and stock is reported in good condition in most western districts. Rainy weather in California during the early part of the month, while a benefit to the citrus fruit and fall truck, did great damage to the raisin crop which was on the drying trays. The hard freezes of the 9th and 19th caused severe loss of apples on trees in the Bitterroot Valley, Montana.

SEVERE STORMS.

The following notes of severe storms have been extracted from reports from officials of the Weather Bureau:
Alabama.—A tropical storm moved from the Gulf of Mexico northward over western Alabama and eastern

Mississippi on October 18, 1916. The passage of this storm was marked by unprecedented high winds in the coast and southeastern counties. The maximum velocity at Mobile was 115 miles an hour from the east at 8:25 a. m., which is the highest record for the State. The damage along the Gulf coast was remarkably slight, considering the velocity of the wind, and appears to have been greatest in Dale, Coffee, and Covington Counties, where much timber was blown down, several houses demolished, and at least two persons killed.

Florida.—A tropical storm passed over Pensacola, Fla., on October 18, 1916, where the wind reached an extreme velocity of 120 miles an hour at 10:13 a. m., when the wind instrument tower was blown down. Many buildings were unroofed or demolished, but the damage to shipping interests was comparatively small because of precautions taken. The total damage was estimated at about \$100,000.

Average accumulated departures for October, 1916.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
New England.....	51.9	+1.5	-4.3	1.79	-1.80	-3.80	4.9	-0.5	77	-2
Middle Atlantic.....	56.2	+0.5	+8.3	1.51	-1.70	-4.70	4.2	-0.6	74	-2
South Atlantic.....	64.5	+0.8	+9.2	3.20	-0.70	-10.20	4.8	+0.8	79	+1
Florida Peninsula.....	77.2	+0.8	-1.8	3.08	-3.20	-13.10	4.9	+0.2	78	-2
East Gulf.....	66.6	+1.0	+7.6	2.50	-0.30	-1.20	3.2	-0.7	72	-1
West Gulf.....	68.0	+1.3	+12.7	1.51	-1.30	-5.80	3.0	-0.7	69	-3
Ohio Valley and Tennessee.....	57.5	+0.9	+1.7	2.20	-0.30	-0.60	3.8	-0.6	70	-1
Lower Lakes.....	52.2	+0.5	+0.1	2.37	-0.90	-2.10	4.9	-1.0	70	-4
Upper Lakes.....	47.6	+0.1	+0.8	3.42	+0.60	+2.50	5.9	-0.1	74	-2
North Dakota.....	40.5	-2.0	-17.6	0.47	-0.80	+0.10	5.7	+0.5	78	+2
Upper Mississippi Valley.....	53.2	+0.2	+3.0	2.27	-0.20	-1.20	4.9	+0.3	72	+1
Missouri Valley.....	53.1	+4.1	+7.4	1.52	-0.40	-5.90	4.4	+0.3	66	-1
Northern slope.....	42.1	-2.6	-13.4	1.79	+0.50	+0.40	5.2	+0.8	68	+8
Middle slope.....	55.5	0.0	+4.0	1.42	-0.10	-4.10	4.0	+0.6	63	+4
Southern slope.....	62.7	+0.3	+15.4	2.24	+0.40	-4.00	3.0	-1.6	64	+1
Southern Plateau.....	57.5	-2.3	-3.4	1.06	+0.50	+1.50	2.2	0.0	52	+10
Middle Plateau.....	47.5	-3.3	-5.8	1.78	+1.00	+1.20	3.2	-0.1	58	+9
Northern Plateau.....	47.8	-1.6	-16.5	0.66	-0.90	+0.80	3.8	-0.8	55	-8
North Pacific.....	50.0	-1.7	-7.7	1.81	-2.20	-8.30	5.1	-1.2	78	-2
Middle Pacific.....	55.1	-3.6	-3.0	1.01	-0.60	-0.10	4.7	+0.9	71	+1
South Pacific.....	59.0	-3.2	-4.6	1.64	+0.80	+5.90	4.1	+1.0	76	+6

WEATHER CONDITIONS ON THE NORTH ATLANTIC DURING OCTOBER, 1915.

The data presented are for October, 1915, and comparison and study of the same should be in connection with those appearing in the Review for that month.

(Chart IX (XLIV—133) shows for October, 1915, the averages of pressure, temperature, and the prevailing direction of the wind at 7 a. m., 75th Meridian time (Greenwich Mean Noon), together with the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average pressure for the month, as shown on Chart IX, differed but slightly from the normal over the greater part of the ocean, although unusual conditions existed in the region shown in the extreme northeastern part of the chart. The Azores HIGH was practically normal as to extent and position, and slightly above in intensity, while the Continental HIGH